



Care of the Laryngectomy Patient

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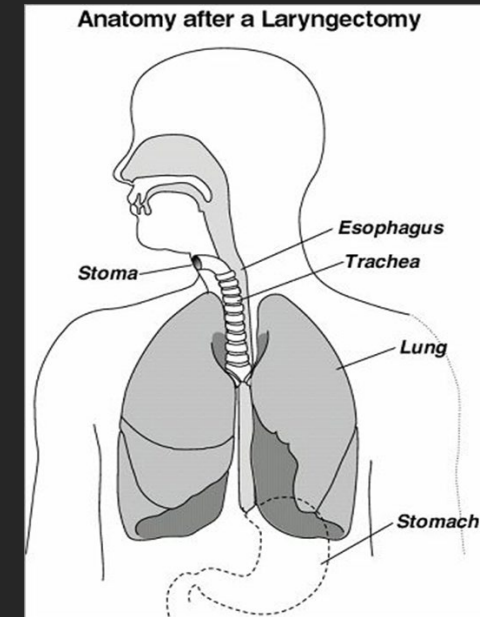
Laryngectomy: Overview

What is Laryngectomy?

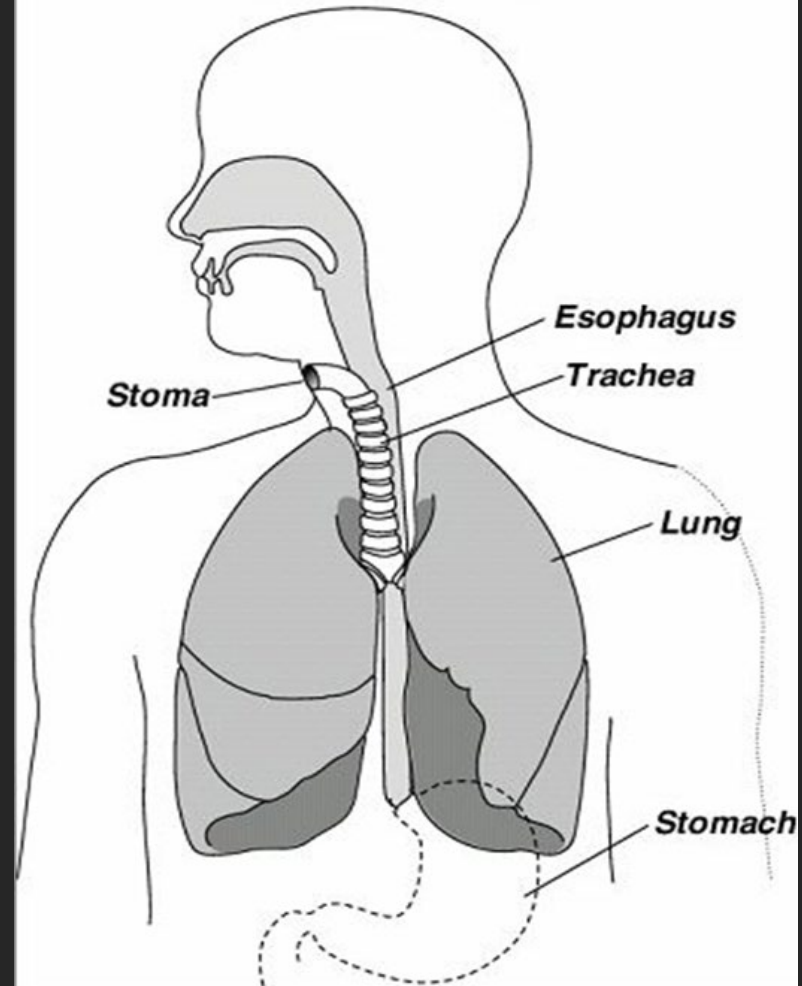
- Laryngectomy: surgical removal of the larynx
- Laryngectomy is typically completed due to cancer
- Occasionally a laryngectomy is necessary after trauma
- Sometimes a partial laryngectomy is completed

A partial laryngectomy is removal of part of the larynx in attempt to salvage the vocal folds. Connection between the lungs and mouth/nose remains intact.

"Laryngectomy" refers to the surgical procedure. "Laryngectomee" refers to a person who has undergone this procedure.



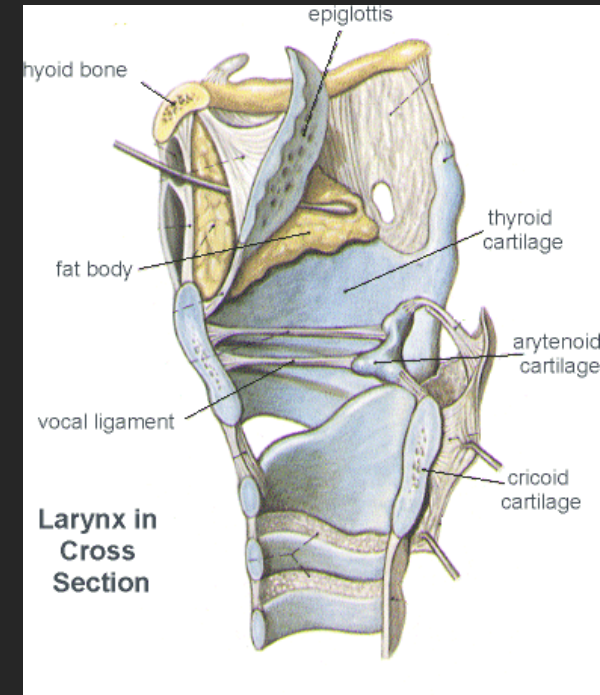
Anatomy after a Laryngectomy



Total Laryngectomy

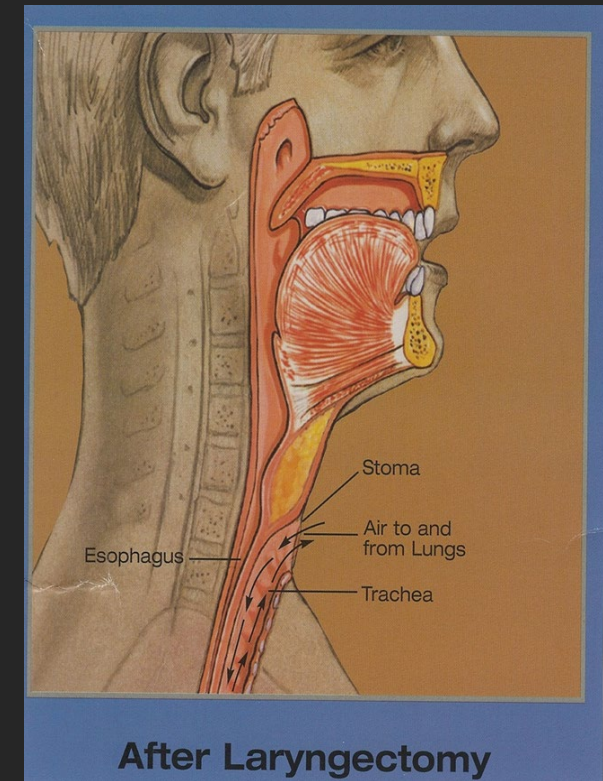
Excision of:

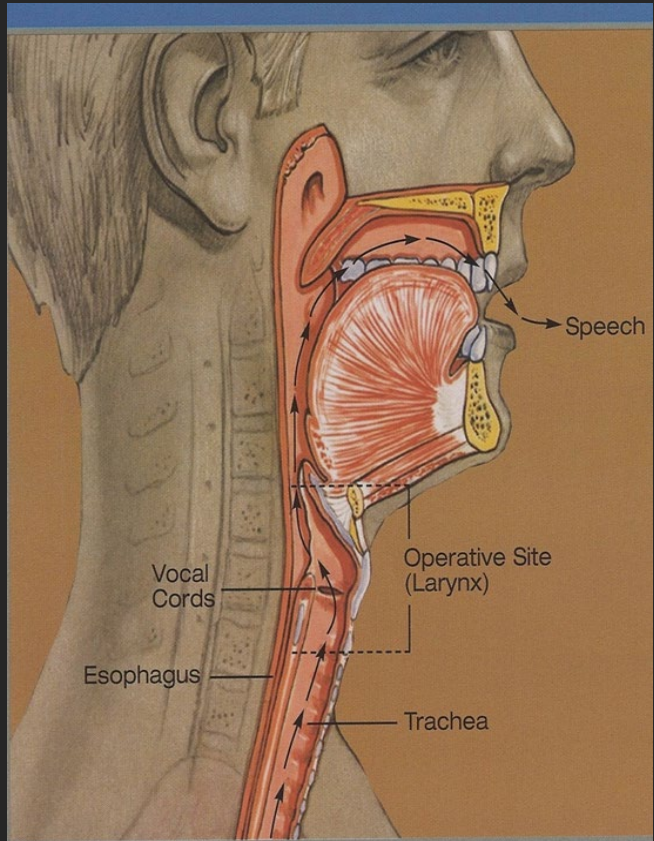
- Hyoid bone
- Laryngeal and hypopharyngeal cartilages
Cricoid, thyroid, arytenoid, cuneiform, corniculates, epiglottis
- All intrinsic and extrinsic laryngeal muscles
- Upper 2 or 3 rings of trachea (so that when Pt bends it forward it doesn't protrude from the surface of the neck)



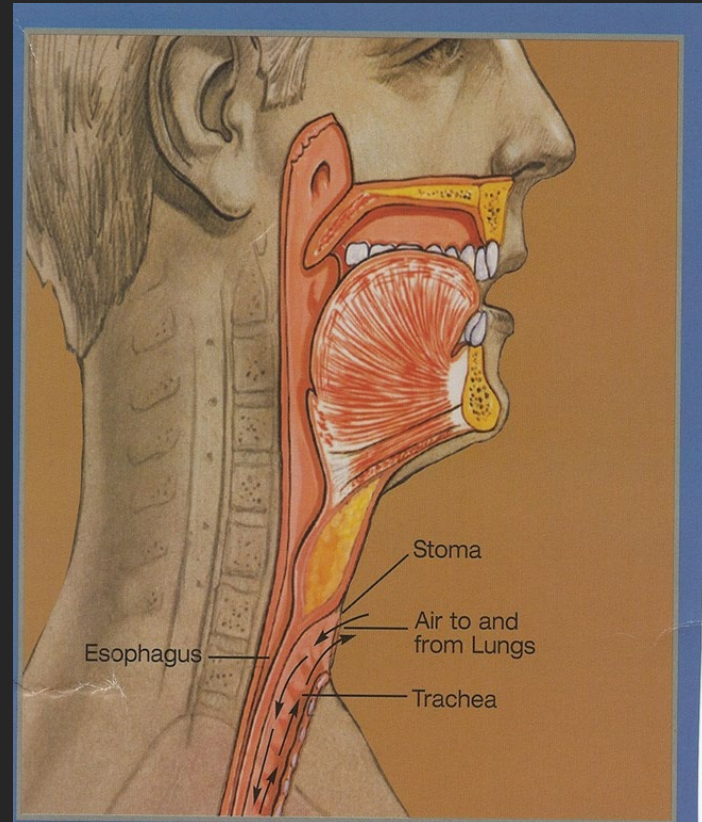
Reconstruction

- Trachea sutured to base of neck
- Creation of a stoma for breathing (permanent)
- Pharyngeal wall sutured together
- Superior portion of pharynx sutured to base of tongue
- Inferior portion of pharynx joined to upper esophagus
- Connection between oral cavity and esophagus referred to as "neopharynx"



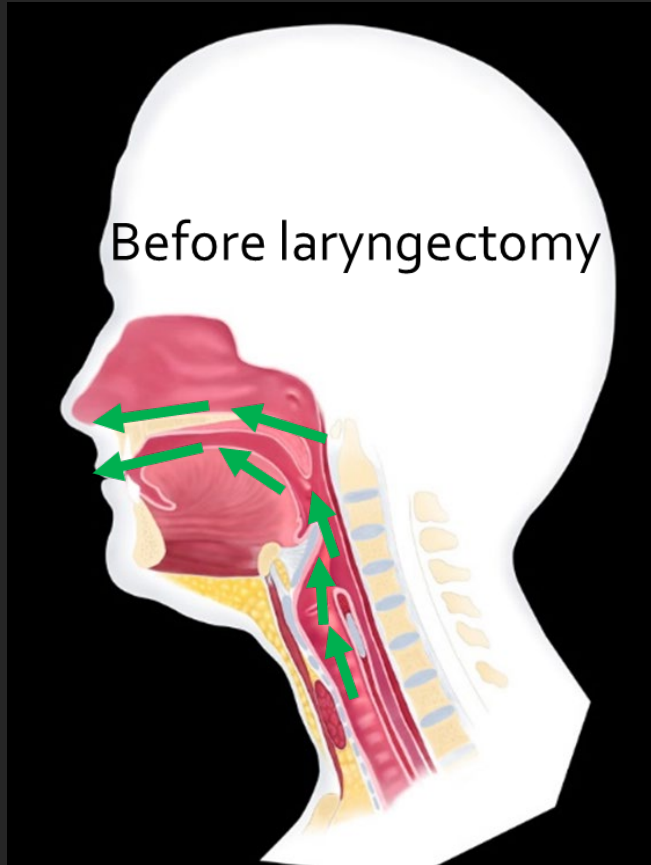


Before Laryngectomy

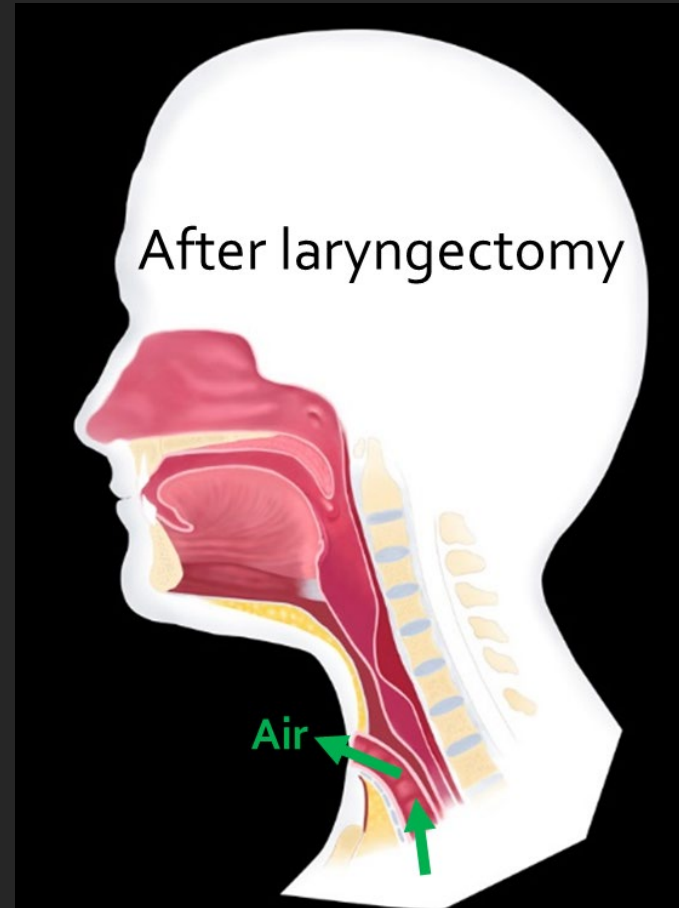


After Laryngectomy

Before laryngectomy



After laryngectomy

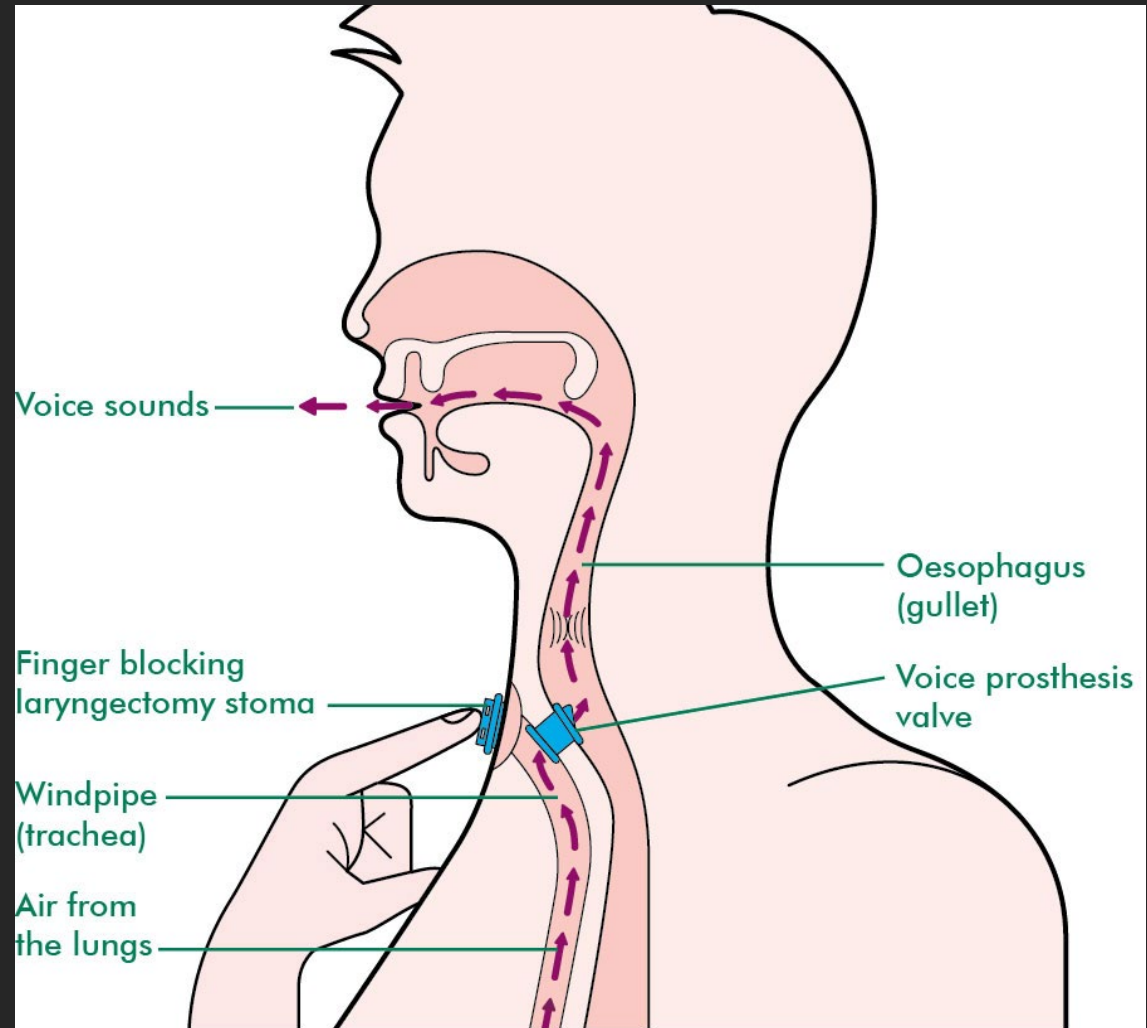


Effects of Laryngectomy

- Permanent stoma breathing
 - Cough out of stoma
 - Separates eating and breathing tasks
 - Loss of typical speech/voicing--Alternate communication methods used
 - Reduced sense of taste and smell, xerostomia common
 - Loss of ability to swim
 - Increased risk for respiratory disorders
 - Neopharyngeal/esophageal stricture is common, often requiring dilatation
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Tracheoesophageal puncture (TEP)

- often completed at the same time as the laryngectomy surgery
 - Surgical opening created between the trachea and esophagus
 - The puncture will accommodate a voice prosthesis
 - Voice prosthesis is a 1-way valve, allowing air to pass from the trachea into the esophagus, with vibration of the esophagus creating voice, without allowing aspiration
 - Fistula will heal if no prosthesis is placed
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Laryngectomy Emergencies

Laryngectomy Emergencies

Potential dangers to the patient

- Staff uneducated
- Lack of equipment/ resources
- Anatomy confusion
- Airway obstruction, occlusion of stoma

National Association of Laryngectomee

- 171 Patient's returned surveys
- 30 people required emergency treatment and felt their facility did not know how to manage their needs.
- One patient had a nurse putting oxygen on, he communicated he was a neck breather. She put a mask on him and said they would force the air down.

Identifying a Laryngectomy

- Identification is the number one way to help a laryngectomy patient
- First indicators
 - Stoma
 - Wrist band
 - MMR registry
- Further investigation
 - EtCO2
 - No air felt or heard from upper airway
 - Chart review
 - Search belongings



Educating Staff

- Respiratory therapy
 - Identifying
 - Providing education
 - Proper resuscitation
 - Humidity
- Speech Therapy
 - Swallowing
 - Atypical speech devices
- Nursing
 - Identifying
 - Notifying RT and speech therapy
- Physicians
 - Familiarize with emergency protocol/ equipment
 - Identifying
- All hospital staff
 - Signage
 - BLS alterations

This patient has a **LARYNGECTOMY**

and **CANNOT** be intubated or oxygenated via the mouth

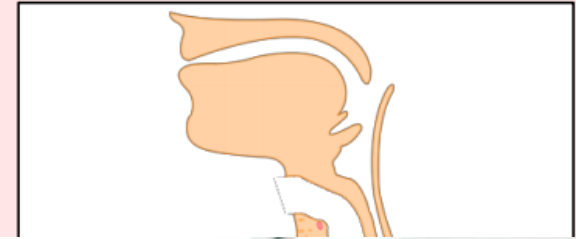
Follow the LARYNGECTOMY algorithm of breathing difficulties

Performed on (date)

Tracheostomy tube size (if present)

Hospital / NHS number

Notes:



Equipment



- Signs at the head of bed
- Emergency box bedside
- Pediatric Ambu mask
- LMA
- Suction
- Boujie
- Endotracheal tubes
- Tracheostomy tubes
- Forceps to remove plugs

Emergency Steps

- Call an airway expert
- Apply O2 to both sites of unable laryngectomy is suspected but not confirmed
- Identify airway
- Remove caps and inner tubes on stoma
- Is the airway patent?
 - EtCO₂
 - Look, Listen, Feel
 - Suction
 - Forceps to remove plugs
- Initiate Code Blue/begin CPR if needed
- Ventilate with LMA or Pediatric mask
- Prepare for stoma intubation
 - 6.0 cuffed ETT or #6 tracheostomy tube
 - Boujie
 - Airway exchange device
 - Fiberoptic scope



Patient and Caregiver Responsibilities

- Patients can prevent a mishap by:
 - Wearing a bracelet that identifies them as neck breathers
 - Carrying a list describing their medical conditions, their medication, the names of their doctors, and their contact information
 - Placing a sticker on the inside of their car windows identifying them as laryngectomees. The card contains information about caring for them in an emergency
 - Placing a note on their front door identifying them as neck breathers
 - Being able to communicate properly.
 - Informing the local 911 emergency services, EMSs and police department that they are neck breathers and may not be able to speak during an emergency
 - Ensuring that the medical personnel of their local ED can recognize and treat neck breathers

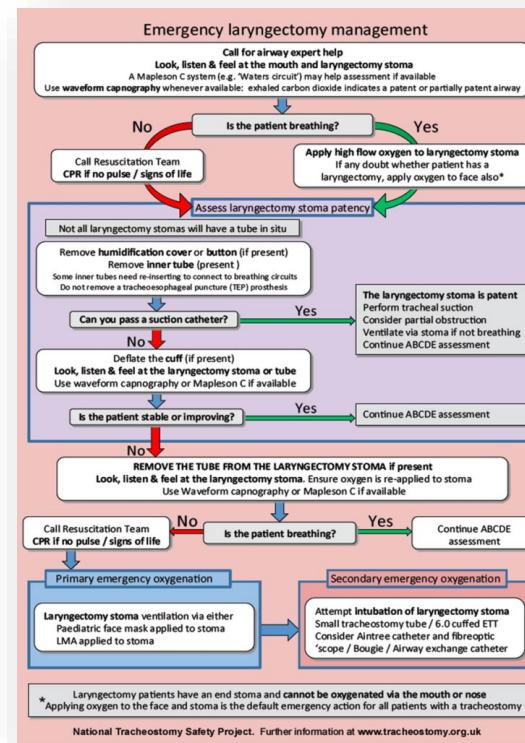
Preventing Emergencies

- Humidity
- Filtering air
- Cleanliness
- Trach Care
- Encouraging follow up care
 - Vaccination
- Secretion removal



Emergency Overview

- Standardize education throughout hospital
- Create an algorithm for emergencies
- Debrief after laryngectomy emergencies for improvement
- Purchase and familiarize staff with the proper equipment
- Educate patients of the importance of wearing a wristband and registering themselves in their local system
- Creating a standard of care throughout the world where all patients feel safe.



This patient has a **LARYNGECTOMY** and CANNOT be intubated or oxygenated via the mouth

Follow the LARYNGECTOMY algorithm of breathing difficulties

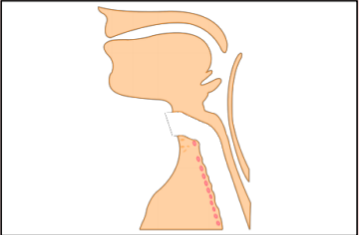
Performed on (date)

Tracheostomy tube size (if present)

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Notes:

There may not be a tube in the stoma.
 The trachea (wind pipe) ends at the neck stoma



Emergency Call: Anaesthesia ICU ENT MaxFax Emergency Team

www.tracheostomy.org.uk

Swallowing Changes in Laryngectomy Patients

Risk of aspiration

Risk of aspiration is greatly reduced or eliminated in most laryngectomy patients

Aspiration can still occur if:

1. The patient has a TEP with voice prosthesis that becomes dislodged, or leakage occurs around or through
 2. Pt develops a tracheoesophageal fistula
 3. Material enters the open stoma (e.g., vomiting while lying down)
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Esophageal Stricture

Upper esophageal tightness can be related to:

- Tightness of surgical closure
- Development of scar tissue
- Pharyngeal constrictor spasm

Excessive tightness results in:

- Difficulty passing food and liquids from the base of the tongue to the esophagus
 - Difficulties can be mild or severe
 - This difficulty may resolve or improve after the surgical site “loosens-up” with repeated use or esophageal dilatation (EGD)
 - May progressively worsen over months or years due to the development of scar tissue
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Speech Generation in Laryngectomy Patients

1. Artificial Larynx/Electrolarynx

- Battery powered devices
- Vibration of oral cavity to produce electronic-sounding voice

Two types:

1) Intra-oral

- Useful immediately after surgery
- Interferes with articulation

2) Neck Type

- Cannot use immediately after surgery due to swelling

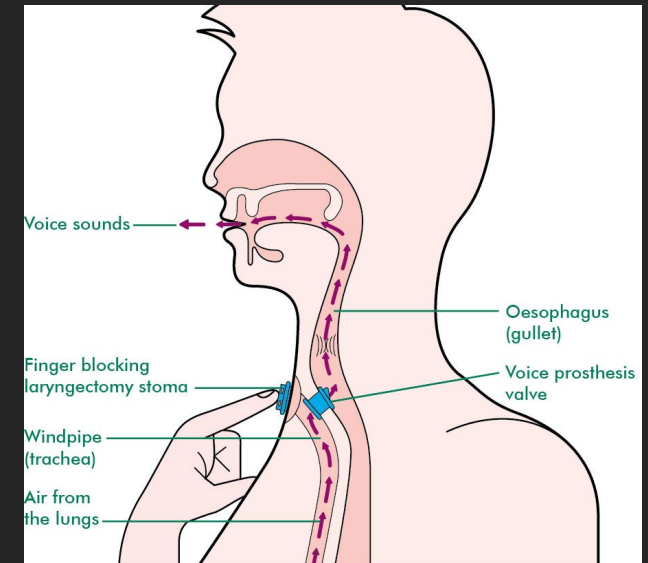


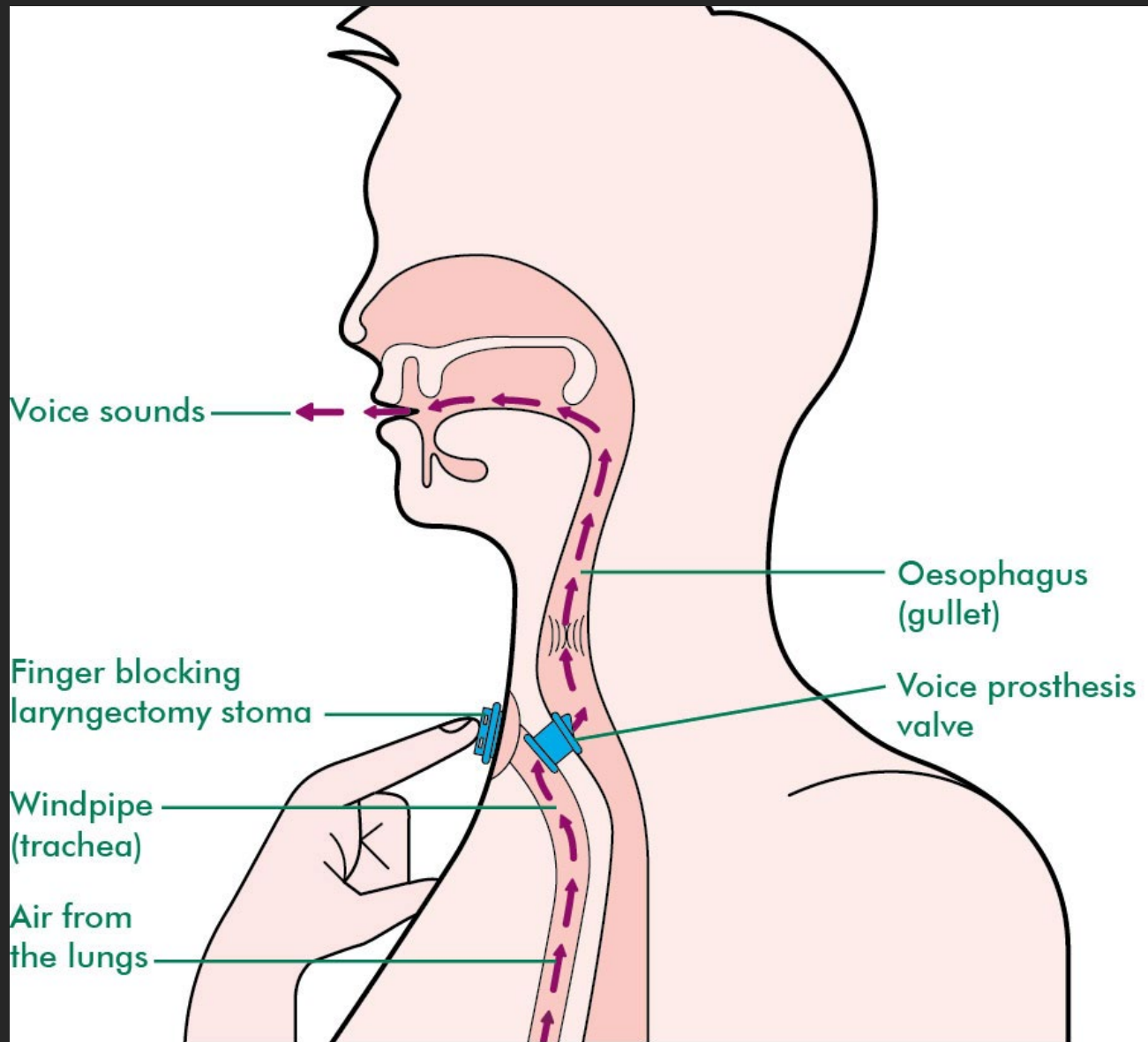
2. Esophageal Speech

- Patient injects air into esophagus from oral cavity, expelling it to vibrate P.E. segment (pharyngoesophageal segment)
 - Oral cavity then forms vibration into speech sounds
 - Good esophageal speech users can inflate up to 1/3rd of esophagus
 - Generally considered challenging to learn and a less desirable communication method
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3. TEP speech

- Voice prosthesis fitted into healed fistula
- Air from trachea is occluded from exiting stoma using manual occlusion or a speech button
- Air redirected through the tracheoesophageal puncture (TEP) vibrating the P.E. segment and creating 'voice'
- Oral cavity then forms vibration into speech sounds





Patient Resources

- Local MMR services will register patients as a laryngectomee, ensuring rapid accurate care provision in the case of emergency
 - Medical alert bracelets indicating laryngectomee can be offered to patients
 - Therapy services (especially SLP) are typically initiated at the facility where surgery was completed, however, follow-up therapy appointments can be completed with outpatient or HHC agencies in the patient's local region.
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Resources

- (n.d.). Retrieved from The National Association of Laryngectomee Clubs:
<https://www.laryngectomy.org.uk/laryngectomee-info/links-to-other-resources/>
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- McDonough, K. D. (2016). Standardizing nurse training strategies to improve knowledge and self-efficacy with tracheostomy and laryngectomy care. *Science Direct*, 212-216.
- Landera, M. A., Lundy, D. S., & Sullivan, P. A. (2010, June 1). Dysphagia after total laryngectomy. *ASHA Perspectives on Swallowing and Swallowing Disorders*, 19(2), 39-44.
- Pisano Messing, B. (2019). Anatomical Transformation of Speech and Swallowing Function Post-Total Laryngectomy. In *American Speech-Language-Hearing Association*.
- [Atos Medical](#) Laryngectomy supplies, resources, and on-call assistance